



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,889	06/03/2004	Manabu Hashikura	039.0043	3888

29453 7590 09/24/2007  
JUDGE & MURAKAMI IP ASSOCIATES  
DOJIMIA BUILDING, 7TH FLOOR  
6-8 NISHITEMMA 2-CHOME, KITA-KU  
OSAKA-SHI, 530-0047  
JAPAN

EXAMINER
----------

NGUYEN, DAO H

ART UNIT	PAPER NUMBER
----------	--------------

2818

MAIL DATE	DELIVERY MODE
-----------	---------------

09/24/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

TH

**Office Action Summary**

Application No.

10/709,889

Applicant(s)

HASHIKURA ET AL.

Examiner

Dao H. Nguyen

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 16-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| <p>1) <input type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br/>Paper No(s)/Mail Date _____.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|---|--|

### DETAILED ACTION

1. This Office Action is in response to the communications dated 08/13/2007.

Claims 1-10, and 16-21 are active in this application, in which claims 20 and 21 are new claims.

Claim(s) 11-15 have been cancelled.

### Remarks

2. Applicant's argument(s) filed 08/13/2007 have been fully considered, but are not totally persuasive. Particularly, Applicants' argument(s) that Ohashi et al. (US 2003/0064225) does not disclose a heating element and/or a ceramic metal composite including a processed-object retaining face is/are not agreed.

First, paras. [0046], [0060], for example, describe a heater to be installed in the device in which the heater is embedded in the basal material. In fig. 12, the basal material is the corresponding ceramic susceptor 127. In addition, figs. 7(b), 10 clearly show resistance heater element 45, 75 formed in the ceramic susceptor 47, 77 respectively. Hence, Ohashi does disclose the heating element.

Second, fig. 12 explicitly shows that the ceramic metal composite 125 is configured to hold the wafer W. The diamond coating film 128 is provided on the upper surface of the ceramic metal composite to prevent the corrosion-erosion effect (see the abstract), hence an even more reliable wafer-receiving surface can be obtained.

For the above reason, it is believed that the previous rejection base on the teaching of Ohashi should be maintained and rewritten below in view of the amendment.

### Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 20 and 21 are rejected under 35 U.S.C. 112, first paragraph, as** containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, none of the drawing nor the specification depicts or describes **“the support structure thermally isolating the ceramic-metal composite from the processing chamber”** as recited in claim 20.

Section 9 (page 6) of the Remarks states that new claims 20 and 21 are supported by original Figs. 2-5. However, as shown in figs. 2-5, the ceramic metal composite 1 is exposed, at least partially, to the processing chamber 20. Hence, the ceramic-metal composite could not be thermally isolated from the processing chamber.

In addition, figs. 6-7 depict the ceramic-metal composite 1 being covered by the corrosion/erosion resistance coating 10 (fig. 6) or member 6 (fig. 7). However, corrosion/erosion resistance coating/member 10/6 are of high thermal conductivity materials (see para. [0006-0008], [0040-0041] of the pending specification). Again, the ceramic-metal composite could not be thermally isolated from the processing chamber.

### **Claim Rejections - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claim(s) 1-10 and 16-19 are rejected under 35 U. S. C. § 102 (b) as being anticipated by U.S. Patent Application Publication No. 2003/0064225 by Ohashi et al.**

Regarding claim 1, Ohashi discloses a holder for use in semiconductor or liquid-crystal manufacturing devices (para. 0026)), comprising:

a ceramic susceptor 120 or 127 (fig. 12); and

a composite 125 of a ceramic and a metal furnished atop said ceramic susceptor 120/127, the composite 125 including a mixture of metallic and ceramic constituents, the mixture including metallic microconstituents distributed in a ceramic matrix (see paras. [0081], [0090], [0109]), the ceramic metal composite 125 further including a

Art Unit: 2818

retaining face (upper surface) configured to hold either a semiconductor wafer or LCD glass as a processed object (configured to hold a wafer W, see fig. 12); and

an electrically resistive heating circuit provided either in the ceramic susceptor, or on a face of the ceramic susceptor opposite the ceramic-metal composite (see paras. [0046], [0060], and figs. 7, 10). See further the above remarks.

Regarding claim 2, Ohashi discloses a holder wherein the Young's modulus of the ceramic-and-metal composite is 300 GPa or less. See para. [0034].

Regarding claim 3, Ohashi discloses a holder wherein the thermal conductivity of the ceramic-and-metal composite is 100 W/mK or more. See paras. [0034], [0048], [0065], [0078].

Regarding claim 4, Ohashi discloses a holder wherein the thermal expansion coefficient of the ceramic-and-metal composite is  $2.5 \times 10^{-6}$  to  $8.0 \times 10^{-6}/^{\circ}\text{C}$ . See paras. [0034], [0048], [0065], [0078].

Regarding claim 5, Ohashi discloses a holder further comprising a support part 56 (fig. 8) or 112 (fig. 12) supporting the ceramic-and-metal composite.

Regarding claim 6, Ohashi discloses a holder further comprising a support part 56 (fig. 8) or 112 (fig. 12) supporting the ceramic susceptor.

Regarding claim 7, Ohashi discloses a holder further comprising a support part 56 (fig. 8) or 112 (fig. 12) supporting both the ceramic-and-metal composite and the ceramic susceptor.

Regarding claim 8, Ohashi discloses a holder wherein a coating 58 (fig. 8) or 128 (fig. 12) is formed on at least a processed-object-retaining side of the holder.

Regarding claim 9, Ohashi discloses a holder wherein the ceramic-and-metal composite 125 functions as an electrode. See para. [0109].

Regarding claim 10, Ohashi discloses a semiconductor or liquid-crystal manufacturing device in which the holder of claim 1 is installed. See paras. [0026], [0090].

Regarding claim 16, Ohashi discloses a holder wherein the metal comprises at least one member of the group consisting of Al, Si, and Cu; and the ceramic comprises at least one member of the group consisting of SiC, Al<sub>2</sub>O<sub>3</sub>, AlN, WC, and BN. See paras. [0033-0034], [0060], [0081], [0090], [0109].

Regarding claim 17, Ohashi discloses a holder wherein the ceramic-metal composite comprises at least one compound selected from the group consisting of Al-

Art Unit: 2818

SiC, Al-Al<sub>2</sub>O<sub>3</sub>, Al-AlN, Si-SiC, Si-Al<sub>2</sub>O<sub>3</sub>, and Si-AlN. See paras. [0033-0034], [0060], [0081], [0090], [0109].

Regarding claim 18, Ohashi discloses a holder wherein the composite comprises a sintered mixture of metal and ceramic powders. See paras. [0081], [0090], [0109].

Regarding claim 19, Ohashi discloses a holder wherein the composite comprises metal infiltrated into a porous ceramic substrate. See paras. [0081], [0090], [0109], [0114], [0118].

### **Conclusion**

7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke, can be reached on (571)272-1657. The fax numbers for all communication(s) is 571-273-8300.



Art Unit: 2818

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

A handwritten signature in black ink, appearing to read 'Dao', with a long horizontal line extending to the right.

Dao H. Nguyen  
Art. Unit 2818  
September 15, 2007